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Biotechnology

Agricultural Biotechnology Report

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Report Highlights:

Singapore follows the lead of developed countries in establishing biosafety guidelines. As Singapore has no indigenous agricultural biotechnology industry, its regulatory policy on imported genetically modified organisms appear to center on issues related to food safety and based on the concept of substantial equivalence. Singapore is prepared to allow imported genetically modified products provided they are in compliance with international safety standards established by organizations like Codex and provided they are approved by the national regulatory authorities in their countries of origin.

In May 2006, Singapore established new guidelines for research involving genetic modification

Includes PSD Changes: No
Includes Trade Matrix: No
Annual Report
Singapore [SN1]
[SN]

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SECTION I. EXECUTIVE SUMMARY

Singapore has set up a science based regulatory framework including the formation of the Genetic Modification Advisory Committee (GMAC) to establish biosafety guidelines in Singapore for genetically modified organisms(GMOs).

While no new and separate legislation has been established specifically for the import, production or distribution of genetically modified organisms, the Singapore authorities is relying on existing food regulations under the Food Act to exercise the regulatory controls and oversight.

All imported foods, both GMOs and non-GMOs have to be determined safe by their respective national regulatory bodies of the exporting countries as well as in compliance with international safety standards established by Codex Alimentarius before they are allowed entry into Singapore.

SECTION II. BIOTECHNOLOGY TRADE AND PRODUCTION

All importers who wish to import genetically modified organism must first seek the approval of the Agri-Food & Veterinary Authority of Singapore, the agency which is tasked with ensuring adherence to the "Guidelines on the Release of Agriculture-Related Genetically Modified Organisms", which took effect in August 1999. The guidelines covers both processed and unprocessed food products and provide the framework for assessment of risks of agriculture-related GMOs to human health and the environment. These guidelines also provide the approval mechanisms for their release in Singapore

Singapore currently does not produce any agricultural-related GMOs in Singapore or outside the country. There are also no biotechnology crops under development nor does post envisage any that will be on the market in the next 12 months.

Singapore has already approved the import of agricultural biotech products such as genetically modified corn and soybeans to be used in foods and feeds. Some of these may be of U.S. origin.

Singapore with one of the highest per capita incomes in the world (about \$24,000 per annum) is not a food aid recipient and is unlikely to be one in the foreseeable future.

SECTION III. BIOTECHNOLOGY POLICY

Regulatory Framework:

The Genetic Modification Advisory Committee (GMAC) comprising of members from ten government, scientific and educational agencies was established in Singapore in April 1999. The main objective of GMAC is to oversee and advise on the research and development, production, use, handling and release of GMOs in Singapore ensuring that these are done in compliance with international standards.

GMAC has developed the regulatory and administrative framework for approving biosafety guidelines regarding GMOs, as well as for the exchange of information with overseas agencies to facilitate the harmonization of guidelines with regional and international authorities. These guidelines address issues related to food safety based on the concept of substantial equivalence.

The biosafety guidelines that are being developed will be in line with international safety standards and will strive to create a streamlined approval and evaluation process. Central to this framework is the use of existing legislation and food regulations enacted under the current Food Act to regulate the import and distribution of genetically modified organisms. GMAC's recommendations will be transmitted to the relevant regulatory agencies for adoption and implementation.

Efforts will also be made to educate the public on genetically modified organisms (GMOs) or GMO derived products through public awareness programs.

The Committee first met on April 12, 1999 where it was decided that three sub-committees would be formed to deal with the wide range of issues related to GMOs. The subcommittee will focus on:

- 1) Biosafety guidelines for agricultural products derived from biotechnology.
- 2) Biosafety guidelines for research on GMOs.
- 3) The case of labeling of GMOs and GMO-derived products.

The GMAC Committee shall consist of representatives from national agencies:

- *Agency for Science, Technology and Research(A*STAR)
- *Agri-Food and Veterinary Authority of Singapore (AVA)
- *Attorney General's Chambers AG Chambers)

- *Consumers Association of Singapore (CASE)
- *Institute of Molecular and Cell Biology(IMB)
- *Ministry of Health (MOH)
- *Nanyang Technological University(NTU)
- *National Institute of Education(NIE)
- *National Parks Board(NParks)
- *National University of Singapore(NUS)

Importers applying to bring into Singapore genetically modified organisms must first prove that these GMOs are considered safe for public consumption in their countries of origin before they are allowed entry into Singapore. Food producers must perform tests on the quality, allergenicity, toxicity, composition and nutritional values of food derived from GMOs before these foods are allowed entry. Foods containing new substances as a result of genetic modification are subjected to additional tests.

Singapore Biosafety Guidelines for Research on GMOs

The Genetic Modification Advisory Committee(GMAC) has released in May 2006 a new set of guidelines to further promote and enhance the biosafety culture amongst Singapore scientists who are working on genetically modified organisms and to establish a common framework for the assessment and notification of research on GMOs in Singapore.

Entitled the ' Singapore Biosafety Guidelines for Research on Genetically Modified Organisms' the Guidelines will provide the road map for ensuring public safety while allowing for the commercial exploitation of GMOs and GMO-derived products by companies and research institutions in Singapore. The Singapore Biosafety Guidelines for Research on GMOs is the first local guideline specific to genetic modification research.

Registration of Approved Agriculture-Related GMOs

A register of approved agriculture-related GMOs will be set up and updated by the GMAC Secretariat. Once the GMOs under consideration have been approved for release the GMOs shall be registered with the GMAC Secretariat. At the time of writing, the register has not yet been established.

Procedures for Notification

All agriculture-related GMOs imported into Singapore by the importer/distributor should be in compliance with existing national and international regulations.

Prior to the distribution of any agriculture-related GMOs in Singapore, the importer is required to submit a proposal before GMAC. The importer should consult GMAC to determine the appropriate approval process for the agriculture-related GMOs and the specific information necessary for an assessment.

Filing an application

Proponents can file an application for the approval of agricultural biotech products under the current regulatory framework set up.

Procedures for approval

The GMAC will forward the proposal to the Sub-Committee. The Sub-Committee may either endorse/reject the proposal or appoint the relevant agency or an expert panel to evaluate the proposal within 90 days. The panel of experts will review and assess the risks associated with each stage of the release using the questionnaire and risk assessment criteria as attached as Appendices 1 and 2. The agency/expert panel will submit their recommendations to the Sub-Committee within 90 days.

The GMAC will decide on the recommendations of the Sub-Committee within 60 days. GMAC can request further information/clarification from the Proponent should the need arises.

Review Process

The proponent is required to disclose the necessary information for risk assessment and safety. The broad classification of information required for GMAC to carry out a risk assessment include:

- Species of organisms
- Eventual use of GMO
- Location for release
- Habitat and ecology
- Genetics of the GMO
- Data from contained work and other studies
- Experimental procedures, monitoring and contingency planning

Political Factors

Singapore authorities follow internationally proven science based standards in enacting the regulatory framework for approving the imports of agriculture related GMOs. Singapore tends to follow the lead of developed countries and international bodies like CODEX in allowing the entry of GMOs into the country.

Names of GMAC office holders

Names and agencies of current office holders of the GMAC Committee:

Dr. NGIAM Tong Tau (Chairman)
Executive Director
United Engineers Limited

Dr. Chua Sin Bin
Chief Executive Officer (Co-Deputy Chairman)
Agri-Food & Veterinary Authority of Singapore

Professor LEE Sing Kong
(Co-Deputy Chairman)

Dean, Graduate Programmes and Research
School of Science
National Institute of Education

Dr. Andre WAN
Director
Biomedical Research Council
Agency for Science, Technology and Research

Mr. Sivakant TIWARI
Principal Senior State Counsel
International Affairs Division, Attorney-General Chambers

Dr. Lena CHAN
Deputy Director
Biodiversity Centre
Conservation Division, National Parks Board

Associate Professor Peter DROGE
Head, Genomics and Genetics Division
Molecular and Cell Biology Division,
School of Biological Sciences, Nanyang Technological University

Associate Professor CHAN Woon Khiong
Principal Investigator and Lecturer
Department of Biological Sciences,
National University of Singapore

Mr. SEAH Seng Choon
Executive Director
Consumers Association of Singapore

Associate Professor GOH Kee Tai
Senior Consultant
Communicable Diseases Division
Ministry of Health

Associate Professor Uttam Surana
Principal Investigator
Institute of Molecular and Cell Biology Division

Dr. Srinivasan RAMACHANDRAN
Associate Director
Strategic Research Programmes
Temasek Life Sciences Laboratory

Dr. Lee Lay Tin
Senior Specialist
Occupational Health & Safety Division
Ministry of Manpower

Policy on Labeling GMOs

Currently Singapore does not have labeling regulations as the authorities recognize that it is a very complex issue that requires careful consideration of several factors, e.g. threshold levels, types of foods to be labeled, and the scientific basis to be used for labeling. ...

The Singapore government is monitoring and studying worldwide developments on this subject. It will wait and assess decisions reached at Codex Alimentarius meetings and see if subsequent recommendations that are adopted at these meetings can be embraced in the local context.

SECTION IV. MARKETING ISSUES

Singapore has not enacted laws to specifically keep out genetically modified foods. Products that are deemed safe for consumption by their national food regulatory bodies in their respective countries of origin will be reviewed by the GMAC committee prior to their release in the Singapore market.

In general there are no barriers to the import of U.S. genetically modified products that have already been approved by U.S. federal agencies like FDA. There are basically no political barriers enacted against the import of genetically modified organisms.

There are also no vocal consumer groups in existence in the country which are against the imports of GMO products.

Public Awareness Campaign

The Singapore Government announced the nation wide distribution of pocket sized educational brochures entitled " Important facts you need to know about GM Food.....With Professor GENEius and Friends". The educational brochures provide an introduction to the concepts of genetic technology, and elucidate approval procedures for GM foods imported into Singapore. Through these brochures, the Singapore Government hopes to enhance public awareness and at the same time clarify any misconceptions that the public may have on GM Foods in Singapore.

The brochures are available to the general public and may be picked up in any one of the 103 community centers and regional libraries throughout the island nation.

Cartegena Biosafety Protocol

At the time of writing this report, Singapore is not a signatory to the biosafety protocol.

SECTION V. CAPACITY BUILDING AND OUTREACH

Ag Counselor has in June 2006 contacted the Singapore government to alert them on India's new requirements for the imports of biotech products. Ag Counselor has urged the GOS to comment on the new GOI regulations as well as to join the United States in requesting that the GOI also notify these new regulations to the WTO SPS Committee.

Post has participated in one major outreach program in 2004. The Singapore Agri-Food & Veterinary Authority of Singapore (AVA) had requested post assistance to locate a U.S. government speaker for a one-day ASEAN workshop on genetically modified food-testing procedures, held in Singapore on May 19, 2004. The workshop was followed by a two-day meeting of ASEAN regulatory officials to discuss the initiation of an ASEAN GM Food Testing

Network, as endorsed by ASEAN Agricultural Ministers in August 2003. The May 19, 2004 workshop included representatives from the ASEAN governments, industry and international regulatory agencies and focused on the following:

The current status of GMO regulations, the status of importation, usage and cultivation, approaches for GM food testing & methodology; issues and challenges posed on GM food testing.

Post and the Embassy Econ Officer managed to locate Peter Chase, Senior Negotiator for Biotechnology, DOS to speak at the ASEAN GMO Food Testing Workshop.

SECTION VI. Reference Materials

Useful websites: Genetic Modification Advisory Committee

Website: <http://www.gmac.gov.sg>

Agri-Food & Veterinary Authority of Singapore

Website: <http://www.ava.gov.sg>

END OF REPORT